A newsletter of the Local Technical Assistance Program (LTAP)

Issue Number 47, Summer 1995

Bulletin

WACRS Holds Successful Event

by George Crommes, P.E.

The winner of the WACRS Road-e-o in May was Chelan County followed by Clark and King Counties. These were based on the composite scores for their equipment operators on the single-axle truck, the tandem-axle truck, the loaders, and the grader. Sixteen counties competed in the 9th annual event in Wenatchee followed by a well developed series of workshops on subjects of interest to the Washington Association of County Road Supervisors (WACRS). As host, the west side group did an outstanding job of designing this event.

Individual top three places (1st, 2nd, and 3rd place) of the road-e-o were:

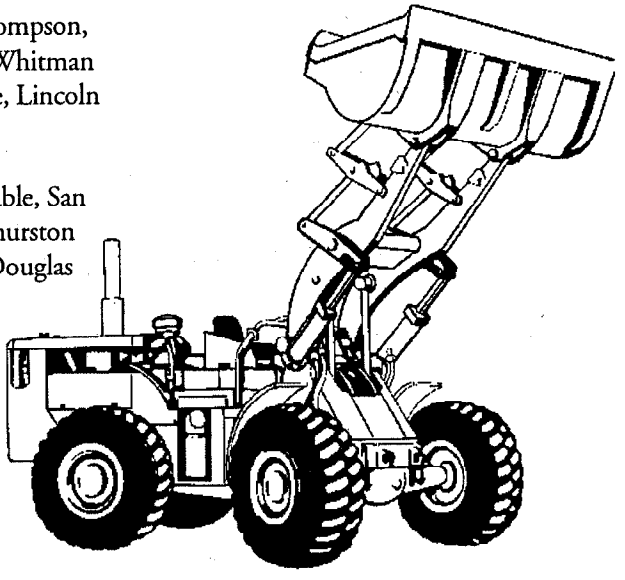
Loader Operation: Don Thompson, Pierce County; Mike Dale, Whitman County; and Shawn Romine, Lincoln County.

Grader Operation: Ernie Cable, San Juan County; Bob Balzer, Thurston County; and Kyle Riddell, Douglas County.

Single-Axle Truck Pairs: Dan Love and Eric Kuntz, Chelan County; Will Fogelbert and Corey Green, King County; and Ken Schwanz and Larry Eisland, Clark County.

Tandem-Axle Truck Teams: Dan Love and Eric Kuntz, Chelan County; Will Fogelbert and Corey Green, King County; and Randy Stroup and Eric Darby, Thurston County.

San Juan County participants won the annual Sportsmanship Award. Congratulations to the best operators and to all who participated.



T2

The Northwest Technology Transfer Center
TransAid-WSDOT

Contents

In the News

Pavement Managers Get New Training Tools

Pavement Management Systems (PMS) are very much on the minds of Washington's local officials these days — and with good reason. Pavement management is one of six management system requirements mandated by ISTEA requiring local agencies using federal funds for certain transportation projects to comply.

To help local agencies, TransAid Service Center including staff of the Northwest Technology Transfer Center (T^2), have developed and distributed two new tools designed to help local agencies implement their pavement management systems. The first tool, a pavement rating video, was produced in response to local agencies' need for a videotape to supplement the widely used *Pavement Condition Rating Manual.*

Production of the video was a partnership with WSDOT's Traffic Data Office, the T^2 Center, the city of Tacoma, and Thurston County. Following discussions with the Data Office, a cooperative effort was underway to produce a video oriented to local agency pavements. TransAid developed the format and managed the project and the Data Office shot the film and produced the graphics. Two local agencies provided shooting locations, and the T^2 Center funded production costs, duplication, and distribution. The result is a professional quality, 30-minute video, produced in three months at a cost of $3,000 — a fraction of the originally estimated time and cost.

The rating video is formatted for teaching, with breaks and intermissions for question-and-answers. The pavement distresses in the video correspond exactly to those discussed in the rating manual, with equal time devoted to flexible and rigid pavement types.

The video has been distributed to all counties and to cities with populations over 5,000. The remaining agencies have been notified that a copy is available upon request.

The second tool, *A Guide for Local Agency Pavement Managers,* was another cooperative effort between WSDOT and local agencies. For new pavement managers, local agencies needed a comprehensive document to describe the entire pavement management process. A technical team of representatives from three cities, three counties, WSDOT, the T^2 Center, the NW Pavement Management System Users Group, and the Road Raters Users Group worked together over a 15-month period to produce a comprehensive guide specific to how pavement management is done by Washington's local agencies. The guide, heavily based on interviews from individual cities and counties, was written by TransAid staff. Copies have been distributed to all cities and counties.

Any pavement manager of Washington's local agencies who has not received the pavement rating video or the PMS implementation manual should contact Laurel Gray of the T^2 Center at (360) 705-7386.

Alternative Fuels Program Launched

The Department of Energy (DOE) has launched a nationwide program to put 250,000 alternative-fueled vehicles on the road and 500 to 1,000 refueling stations in 50 cities across the United States.

Deputy Secretary of Energy Bill White said that the CLEAN CITIES program will aid in reducing American dependence on imported oil, help cities meet new standards set by the Clean Air Act through reduced vehicle emissions, and create jobs by strengthening American competitiveness.

CLEAN CITIES is a voluntary program designed to encourage fleet vehicle conversion to alternative fuel use while providing refueling and maintenance facilities for their operation. DOE will help bring together fuel suppliers, vehicle manufacturers, consumers, fleet managers, utilities, environmental groups, and federal, state, and local government agencies. When a commitment by these stakeholders is demonstrated through a Memorandum of Understanding, communities will receive a CLEAN CITY designation by DOE.

Source: TR News 170, January-February 1994

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Louisiana Goes High Tech in Pavement Inspections

The Louisiana Department of Transportation and Development (DOTD) is modernizing the way in which DOTD collects information to determine which roads should be fixed. DOTD is spending about $500,000 to hire Roadware, Inc., to drive a sophisticated motor vehicle up and down Louisiana highways to collect data continuously at highway speeds to determine pavement condition, rutting, roughness, grade, curve, radius, pavement width, and more. The vehicle is equipped with special video cameras that automatically record the location of the cracks and potholes and allow engineers to schedule maintenance and repair more efficiently. Without leaving the office, traffic planners can measure the width of a road to determine if a passing or a turning lane should be added. For years, DOTD has relied solely on 30 workers statewide, with clipboards in hand, to determine which parts of the state's nearly 27,000 kilometers of paved roads should receive attention.

Source: Public Roads, Spring 1995

HITEC Completes First Year

The Highway Innovative Technology Evaluation Center (HITEC) completed its first year of operation in January. HITEC is now evaluating 20 new products that could make America's highways safer and more durable. Technologies being evaluated include a pothole patching compound, a nuclear gauge to measure the ratio of water to cement in fresh concrete, a post-tensioned concrete segmental bridge system, a sight and sound wall, an innovative sign system for use in glare-prone areas, and seismic isolation and energy dissipation devices for highway bridges. During the first year, much emphasis was placed on gaining public sector participation and endorsement of the HITEC process. As HITEC moves into its second year, emphasis is being placed on the expeditious completion and acceptance of evaluation reports.

Source: Civil Engineering Research Foundation

New *Highway Runoff Manual* Available

The WSDOT's Environmental Affairs Office announces that their *Highway Runoff Manual* (M 31-16) is available for local and regional government agencies, transportation contractors, consultants, and others who seek technical guidance with critical stormwater runoff issues. Stormwater runoff from roadways and transportation construction projects is a rapidly growing field in terms of both regulatory requirements and technical complexity. The guidelines in the *Highway Runoff Manual* are currently required in the Puget Sound area and are used as a comprehensive reference by WSDOT personnel statewide.

The *Highway Runoff Manual*, officially approved for use by the Department of Ecology, provides detailed guidance for a number of stormwater management issues, including:

- Roadway maintenance practices.
- Minimum requirements for projects involving clearing, grubbing, embankment work, or other earth work.
- Site plan development for stormwater.
- Selection protocol and design specifications for Best Management Practices used to mitigate the impacts of stormwater runoff from road construction projects.
- Hydrologic analysis methods used by WSDOT to design stormwater treatment and detention facilities.

Contact Ray Kevorkian, WSDOT Engineering Publications, at (360) 705-7428 or fax (360) 705-6808.

Trent Elected National Engineers Head

Pierce County Public Works Director, John O. Trent, was recently elected president-elect of the National Association of County Engineers (NACE).

Trent has been with Pierce County since 1986, and its Public Work's Director since 1990. He has long been a leader in the Washington Association of County Engineers and Public Work's Directors.

HITEC — New Products and Innovations

by Gerald M. Hendricks, P.E.

The Need for Innovation

County engineers in the United States face significant challenges from ever increasing traffic volumes and vehicle weights, to demands for new and innovative ways to move people and goods as well as ever increasing environmental demands. Many rural counties have low volume roads that require significant commitments of resources that stretch our budgets beyond reasonable limits. Simply, our roads and bridges are showing signs of wear to a higher degree than ever before and funding is as scarce now as at any time in our history.

The successful engineer finds ways to innovate by working smarter, improving staff training, seeking to standardize when possible and looking for new solutions to construction and maintenance needs. When we consider the years of formal education most of us received in college, we wonder why so few of our current responsibilities were covered in the classroom. We are not alone in our need to find new solutions. We find our peers at the state and federal level with similar problems and facing the same challenges, also without adequate funding.

Marketing Transportation System Innovation to Local Governments

With the continuing challenge we face, imagine the frustration of private industry seeking to satisfy the transportation needs of local governments. American industry has to deal with agencies, budgets, and staff already stretched to the limit and sometimes unable to respond positively to new transportation construction and maintenance products. In order to market new technology for the highway industry, private industry needs to identify and understand our needs, perform research and develop new products, sometimes where no standards exist. Finally, industry needs to gain acceptance of their products by state transportation departments and 38,000 local government agencies, their potential customers.

In 1992, decisive action was taken to encourage innovation in the highway industry. The goal was to encourage innovation and acceptance of new products in the highway industry, particularly where no standards exist. A new public/private sector partnership was envisioned by federal and state transportation engineers and members of the highway industry. HITEC, the Highway Innovative Technology Evaluation Center, was born of necessity.

HITEC Initiated

1993 marked the inaugural year for the HITEC program. There was much work to be done to forge the new partnership. An agency recognized as being professionally credible and capable of directing research and quickly assembling the partnership coalition was needed. The Federal Highway Administration selected the American Society of Civil Engineers' Civil Engineering Research Foundation (CERF) as the agency to create and house the HITEC . A contract that takes HITEC through the critical first few years was signed, a small staff was hired and an 18-member HITEC Executive Committee (EXCOM) was appointed.

Policy oversight for HITEC is provided by 18 representatives of the highway/civil engineering community. Six are from the private sector (innovators, practitioners, consultants), six are from the public sector (four represent state highway agencies, one represents the American Public Works Association, and one represents NACE). Six members serve as ex-officio members representing the founding agencies (the Council of University Transportation Centers, AASHTO, TRB, FHWA, ASCE, and CERF). I have the honor of representing NACE on ESCOM and serve as chair of the Communications Task Force.

HITEC serves as a one-stop service center and national clearinghouse to promote the introduction of new products and innovative technologies for highways and roads where no standards exist. HITEC directs the research and provides product evaluations to interested "user" agencies. HITEC recognizes that a critical element is that it's reports are recognized as factual and are accepted by the states and local agencies.

First Year of Operation

HITEC opened its doors for business and began accepting applications for product evaluations in February 1994. Few of us can imagine taking a program from concept to reality in only 18 months. I have concluded that this program has been one of the most remarkable initiatives to come along.

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HITEC Director Peter Kissinger and his staff have done a remarkable job of getting the word to industry leaders. HITEC presentations have been made at most of the public and private sector conferences and meetings dealing with transportation infrastructure. As a result, there were 20 manufacturers participating in the program as of March 1995.

The National Association of County Engineers Role in HITEC

There are three ways NACE members can get involved in the HITEC program. The first is to keep informed about the program and learn about new products/technologies as they evolve. Then, volunteer your county as a product demonstration site. My agency, Pierce County, Washington, is one of the demonstration test sites for a product called Bondade. There is not that much work involved in the product evaluation and we will have the feeling we contributed our time for the benefit of every county in the United States when our work is completed.

The second is to serve on a technical evaluation panel. Product evaluations are conducted by research universities and consultants. Each product evaluation is guided by a panel of technical experts in their respective field. With our knowledge of the transportation field, county engineers have an excellent background for guiding the evaluations.

Finally, when we review the technical reports about the new applications, give the products a try. Specify the products and determine how the product can help you initiate innovation in your county.

Many of us can help the HITEC program succeed. The size of our county organization or budget is not important. Often, smaller counties are better geared to participate because their size is more conducive to trying new products and their need for new solutions to transportation problems is just as important. If we expect this program to provide us with viable solutions we need to take the first step toward participation in evaluation and specifying new products.

The focus of the HITEC program is to let the private sector know their products will be impartially evaluated and the resulting reports will be readily accepted by state transportation departments, cities, counties and other public agencies. The process is intended to speed acceptance of new products and technologies in the field and the first product reports are scheduled to be released later this year.

(Mr. Hendricks is the Maintenance Manager for Pierce County Public Works and Utilities.)

Editor's Column

This is the age of information. Practically everything anyone wants to know on a subject is readily at hand. A long lasting and stable way to learn more is by reading. As noted by Tom Jefferson, "I cannot live without books," these are my sentiments also. If you are concerned with reading for yourself and for others, perhaps some of the following may help.

1. Join a book discussion group.
2. Develop and/or expand a home library.
3. Sponsor a child in a summer reading program.
4. Give a book as a gift.
5. Get a library card and use it.
6. Share your enthusiasm for a book with others especially children.
7. Read books aloud to family and friends.
8. Reread a favorite book.
9. Ask your friends to tell you about a book that shaped their lives.
10. Teach someone to read.
11. ***Expand Your Knowledge!***

    Take advantage of WSDOT's Library

    A free T^2 resource

    Information is available on transportation design, construction, maintenance, and management.

    Call today (360) 705-7750

What's New With You?

Send us your success stories so we can share them with others. Have you tried something new and/or innovative in your existing work? Please call (360) 705-7390 or mail to the T2 Center whose address is on the back.

Agencies Work to Enhance Safety

by Dan Sunde, P.E.

The Washington Highway Safety Management System (SMS) is one of only two ISTEA safety management systems in the country to receive federal approval as an existing system. The significance of this is that by using our current safety programs, organizations, and processes there will be no new safety requirements imposed on the state's local agencies as a result of the ISTEA regulations.

A group of progressive agencies recognize however that, although our current system has been acknowledged and accepted, there is room for improvement. The group, comprised of individual cities, counties, local agency risk pools, TIB, CRAB, AWC, and TransAid has been working in partnership to accomplish the following:

1. Define how the SMS functions at the local level;
2. Define the steps needed to evaluate and implement new ideas;
3. Develop practical working examples-or models-illustrating how the SMS can work at different levels of sophistication; and
4. Develop specific "tools" to assist agencies in identifying and prioritizing their safety needs, selecting and implementing solutions, and monitoring and evaluating their physical inventory, programs, and strategies.

As a result of its work, this group has become an integral part of the statewide SMS by being adopted as the Local Agency SMS Implementation Subcommittee of the statewide SMS Standing Committee.

Later this year, the Subcommittee plans to publish an SMS implementation guide for local agencies which will document their work in a practical format. TransAid has contracted with Lou Haff, recently retired from King County, to act as the project lead in developing the model and the guide. Lou brings to the project many years of experience in developing and implementing safety management at the local level.

Any agency interested in getting involved in the subcommittee and improving their own safety management is invited to contact either Dan Sunde, TransAid Management Systems Engineer, at (360) 705-7383 or Lou Haff, Project Lead, at (206) 283-4401.

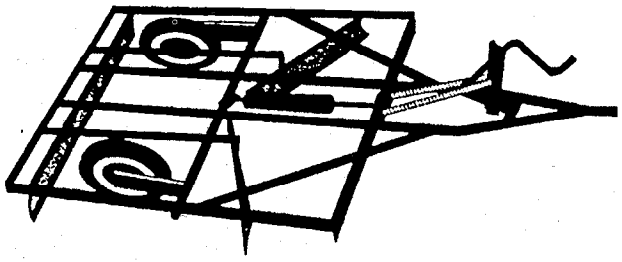
Some New Ideas

A Lightweight Road Leveler

This idea comes from Larry Peterson of Beaver, Wisconsin.

The aim is to level gravel roads that, during spring thaw, would sink a heavy road grader. The device is based on an old farm disc frame cut down to 8 feet. The disk gang mainframe holds old snowplow blades attached with an angle iron. Two smaller front cutting blades angle toward the center to cut a window to the middle that the rear blade levels out. The front blades are adjusted for depth by a crank at the hitch, and the height of the entire unit is controlled by a two-way hydraulic ram controlled from the cab. The leveler is hauled behind a standard 33,000 GVW truck. It follows the road contours. It smoothes and levels the road surface without cutting off the frost bumps. (Large graders cut off frost bumps, which then turn into low spots when the frost ends.) For more information, call Larry at (414) 897-4378.

Source: Wisconsin T² Center, Spring 1989 via Virginia T² Center

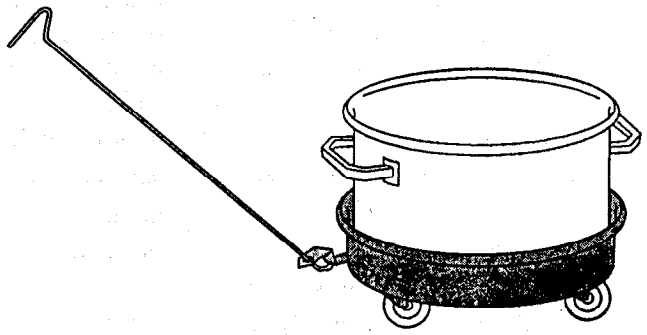


A Little Red Wagon

This idea comes from the shop crew at the Clare County Road Commission in Michigan.

The grader operators in Clare County perform their own periodic maintenance, including oil changes. In the past, the operator would drain the oil into a large container and then find someone to help him or her carry the thing over to the oil disposal area. The job was awkward and always risked spilling some of the used oil. To make the job easier and safer, the shop crew came up with "The Little Red Wagon Oil Carrier." A circular frame attached to four casters holds a container that can accommodate the oil capacity of the grader. A steel rod formed into a handle and attached to the base allows the user to pull the wagon over to the oil disposal area without any extra help and without the risk of spilling the load.

Source: Michigan T² Center, Spring 1993



Oregon Saves With Red Light-Emitting Diodes

Oregon DOT has completed an evaluation of light-emitting diodes (LED) used as traffic signals. Oregon DOT has concluded that significant savings can be achieved in operating costs and increased life by converting incandescent lamps for the red ball, the red arrows, and the orange pedestrian hand symbol to LEDs. Although the initial cost to convert is between $200 and $400, the conversion pays for itself over time because the energy use of LEDs is 50 percent less than incandescent lamps and the life expectancy of LEDs is 10 years compared to one year for incandescent lamps.

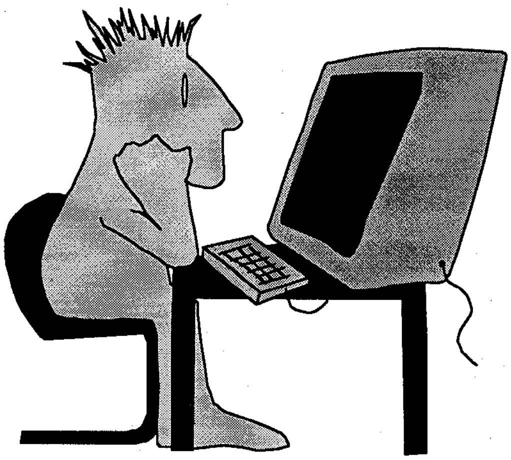
Source: Public Roads, Spring 1995

The T^2 Center's

Electronic Bulletin Board System

(Old System, New Offerings)

by Stan Sanders



The Northwest Technology Transfer (T^2) Center has been operating an Electronic Bulletin Board System (EBBS) for a number of years. The system now has more offerings than in the past. Previously the EBBS has had a limited amount of file available for downloading.

The EBBS is now supported by a faster modem, with a speed of 14,400 baud (characters per second) and an upgraded version of Wildcat, the bulletin board program. Wildcat is a full featured menu-driven bulletin board which will allow file transfers at a much greater speed. The limiting factor is the speed of the slowest modem between the EBBS and the caller. If the caller has a slower speed modem, file transfers will be at the speed of his/her modem.

We have recently added new features to the EBBS that may be of value to our users. Freeware or shareware software programs have been added to the system providing new offerings. Bulletins have been added that allow the callers to review training opportunities available to Washington's local agency personnel. Other bulletins have been added such as available videos, position papers on ISTEA, and information on projects being advertised by the Washington State Department of Transportation. All of these offerings are available for viewing or downloading.

Before logging onto the EBBS, basic parameters should be set on the callers computer communications software. These include Emulation of VT 100/200, Full Duplex, 8 bits, no parity, and 1 stop bit. The remainder of the settings can be the manufactures default. With these settings, the caller should have no trouble accessing the EBBS.

Callers will be welcomed onto the system. New users will be asked to answer a few simple questions such as type of computer they are using and their date of birth before being greeted with the welcome screen. All callers will be asked to provide a password of their choice that should be retained and used each time the system is accessed. For first time users the questions may seem silly or personal, but they are used in various reports and for security purposes. All personal information is kept confidential.

At the welcome screen the caller will be notified of any changes to the bulletins. A choice will be given to view the bulletins or go on to the Main Menu. The Bulletin Menu (Figure 1) gives access to information on educational opportunities, videos available to Washington public agencies through the T^2 Center, and other information on downloading, uncompressing files, etc.

When the caller chooses to go to the Message Menu (Figure 2), the system will check his/her mailbox for any messages that may be waiting. Messages can be sent and received through the system. They can be viewed and comments made, messages forwarded, and other neat things. The caller can send messages to other users and messages to the sysop.

The Main Menu (Figure 3) is the heart of the system. It provides access to the system statistics, configuration, help level, and other menu areas. The help

Figure 1

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       Bulletin Menu          Wildcat! v4      Û
ÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÜÛ

 [ 1]....BBS Glossary of Terms
 [ 2]....Education and Training Opportunities From T2
 [ 3]....New Contract Information for Current Projects on
         Advertisement
 [ 4]....Bridge Replacement Candidate Questionnaire
         (Download questionnaire, complete and return).
 [ 5]....How to Download (copy to your computer) a file.
 [ 6]....How to Uncompress a file.
Bulletins updated: NONE

Enter bulletin [1-6], [R]elist menu, [N]ew, [D]ownload, [Q]uit? [      ]
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system of this program is quite complete and can be accessed at any menu by pressing the "?" key. The help files are divided into categories and the caller can move around easily to get assistance wherever needed. Moving from the Main Menu to one of the other menus can be done by pressing the appropriate keys, as indicated. The caller can move back to the Main Menu by pressing "Q", for quitting to the main menu.

From the File Menu (Figure 4) the caller can obtain a listing of all of the files available for transfer by areas. Each file area lists the files that are available by name, size, transfer time and in some instances a brief description of the file. Files in a text format can be viewed and those which are archived can be looked at to determine the files that have been combined and compressed. File transfer information can be obtained by pressing the "F" key. This tells users the available transfer methods. While reviewing the files those which are desired to be transferred can be marked and downloaded as a group or individually.

When the download is initiated, Wildcat will prepare the files for transfer. When the system is ready to download, it will so indicate with the message, "Ready to send- (name of file)-" Please begin your download now." The caller then initiates the transfer through the communications program at the caller's computer. Following the file transfer the Bulletin Board will indicate whether or not the download is successful.

When the file transfer is complete, Wildcat returns to the File Menu. To exit the EBBS, press the "G" key and Wildcat will ask if you are sure you want to exit. Press "y" and you will be logged out of the system. The caller need only hang up from the communications software on his/her computer.

This has been a quick tour of the Wildcat system and has only touched on the basics. We encourage callers to log on and explore the EBBS and see what it has to offer. It is easy to use and a flexible tool for communicating material. The phone number of the EBBS is (360) 705-6840. Problems with the system and questions or comments may be directed to me at (360) 705-7477. I'm the sysop and can get answers to questions that may arise. Good Luck, Computing!

Message menu: ***Figure 2***

```
[Q]....Quit to the main menu          [J].........Join conference
[R].............Read messages          [S].............Scan messages
[E].......Enter a new message         [K]............Kill a message
[G].........Goodbye & logoff          [H]...............Help level
[?].............Command help          [F]................File menu
[N]................DOS hook           [U]....Update conf scan/read
[1]...............Sysop menu          [X]...............DOS hook 1
[Z]...............DOS hook 2

Conf: "[0] - General Mail Folder", time on 2, with 597 remaining.

Message menu: [Q J R S E K G H ? F N U 1 X Z] ?
```

Main menu: ***Figure 3***

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[M].............Message menu          [F]................File menu
[C]....Comments to the sysop          [B].............Bulletin menu
[P]............Page the sysop          [I]...Initial welcome screen
[Q].............Questionnaire         [V].............Verify a user
[Y].............Your settings        [S]........System statistics
[U].............Userlog list         [D]....................Doors
[N]...............Newsletter         [G].........Goodbye & Logoff
[H]...............Help level         [?].............Command help
[1]...............Sysop menu         [J].........Join conference
[X]...............DOS hook 1         [Z]...............DOS hook 2
[W]............Who is online         [T]..Talk with other node(s)

Conf: "[0] - General Mail Folder", time on 1, with 598 remaining.

Main menu: [M F C B P I Q V Y S U D N G H ? 1 J X Z W T] ?
```

File menu: ***Figure 4***

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[Q]........Quit to main menu          [I]....Information on a file
[L].....List available files          [D].......Download a file(s)
[U].........Upload a file(s)          [N]......New files since [N]
[T].............Text search           [S]....Stats on up/downloads
[F].......File transfer info          [G].........Goodbye & logoff
[H]...............Help level         [?].............Command help
[M].............Message menu         [V]...View a compressed file
[R].........Read a text file          [1]...............Sysop menu
[J].........Join conference           [E].........Edit marked list
[X]...............DOS hook 1         [Z]...............DOS hook 2

Conf: "[0] - General Mail Folder", time on 1, with 597 remaining.

File menu: [Q I L D U N T S F G H ? M V R 1 J E X Z] ?
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Free Publications

For Washington recipients only.

Name _____

Agency _____

Address _____

City and Zip _____

Phone _____

Check those items you would like to order.

___ Rating Unsurfaced Roads — A Field Manual for Measuring Maintenance Problems, CREEL

Provides the tools necessary to rate and evaluate unpaved roads.

___ Unsurfaced Road Maintenance Management, CRREL

After rating unsurfaced roads, the next steps are covered in this special report.

___ Highway Utility Guide, FHWA

Provides the state-of-the-knowledge on the better practices being employed and addresses the issues when highway and utility facilities share a common right of way.

___ Moving with Metric — Metricube, FHWA (1994)

Foldable cube shows volume, temperature, mass weight, length, and other interesting facts on metric conversion.

___ Metric-English Slide Rule Converter, FHWA

___ Scrap Tire Utilization Technologies, NAPA

This booklet provides a succinct overview of various uses for scrap tires, barriers to implementation, and sample policy statements on solid waste management of waste tires used in Oregon.

___ State-of-the-Art Survey of Flexible Pavement Crack Sealing Procedures in the United States, CRREL (1992)

Brief 20-page guide summarizes current methods and materials used by contractors and state departments of transportation for crack sealing on flexible pavements. Advantages and disadvantages are stated.

___ Roadside Improvements for Local Roads and Streets, FHWA

Brief, well illustrated guide shows low cost methods of improving and enhancing roadside safety. It is not a design manual.

___ Maintenance of Aggregate and Earth Roads, NWT^2 Center (1994 reprint)

The fundamentals.

___ Asphalt Seal Coats, NWT^2 Center (1994 reprint)

The fundamentals.

___ Concrete Pavement Repair Manuals of Practice, SHRP (1994)

Contains two manuals for use of highway maintenance people. Covered are the repair of joint seals and the state-of-the-art of rapid repair of partial depth spalls.

___ Asphalt Pavement Repair Manuals of Practice, SHRP (1994)

Contains two pavement maintenance manuals for use on highway maintenance. Each is a compendium of good practices for asphalt concrete (AC) crack sealing and filling and pothole repair.

___ Local Low Volume Roads and Streets Manual, ASCE (1992)

This well organized manual provides local agencies with basic information on planning, design, construction, and maintenance of local low volume roads and streets.

___ Geotextile Selection and Installation Manual for Rural Unpaved Roads, FHWA (1989)

A guidebook for selecting and installing geotextiles.

___ Guide to Safety Features for Local Roads and Streets, FHWA (1992)

Booklet deals with the construction and maintenance practices that will lead to increased safety.

___ Planning, Design, and Maintenance of Pedestrian Facilities, FHWA (1989)

A textbook on the subject.

___ Development of a Procedure to Rate the Application of Pavement Maintenance Treatment, SHRP (1992)

A partial printing of a completed SHRP product. This report uses decision trees and summarizes national practices.

___ Pavement Management Implementation in Washington's Counties and Selected Cities — A Progress Report

Documents the results of a survey of Washington counties and cities by Grays Harbor County staff regarding pavement management systems, data collection, and use of this information.

___ Traffic Conflict Techniques for Safety and Operations, NHI

Notebook from the class. Supply is limited.

Orders may be faxed, mailed, or phoned in to Laurel Gray
Phone: (360) 705-7386
Fax: (360) 705-6822
Mailing Address: NWT^2 Center, WSDOT/TransAid, PO Box 47390,
Olympia, WA 98504-7390

Thin Polymer Bridge Deck Overlays

A recently completed WSDOT research report provided some interesting information for those agencies considering polymer overlays on their bridges. The "Executive Summary" and "Observations and Lessons Learned" of this report have been shortened and edited to provide the highlights of this ten-year evaluation.

Executive Summary

This report summarizes the department's ten years of experience with "epoxy" and "Methyl Methacrylate" (MMA) thin polymer bridge deck overlays. WSDOT selected eight bridges to be included in a FHWA sponsored experimental feature program that began in 1985. The purpose of the experimental feature program was to gain knowledge about field installation techniques and procedures, and to assess the performance and effectiveness of the polymer overlays over time.

WSDOT uses a 1.5-inch thick modified concrete (either Latex or Microsilica) as its primary type of bridge deck overlay. Modified concrete overlays are considered to be more durable and require less long term maintenance than thin polymer overlays. Modified concrete overlays are also preferred when the amount of deck repair is extensive, since repairs made with concrete have performed better than patching materials used with a thin polymer overlay.

In some cases a bridge's physical characteristics, such as lightweight design or narrow roadway width, will not allow using a modified concrete overlay. Thin polymer overlays provide an alternative. Thin polymer overlays offer more rapid construction, curing in 4 to 8 hours compared to 42 hours for a modified concrete overlay. Thin polymer overlays are light weight (due to their $^3/_8$-inch thickness), approximately 5 lbs./SF verses 19 lbs./SF for a modified concrete overlay and are generally less labor intensive and require less specialized equipment than a modified concrete overlay.

Recent bond tests on several bridges show that epoxy overlays have a higher average value (274 psi) over time compared to MMA overlays (143 psi). The latest friction numbers show MMA overlays retain friction resistance very well over time, from an initial average value of approximately 40 to a value in the mid 30s after years of service. Test results show that the initial friction numbers for epoxy overlays starts around 70 and falls to the mid to low 20s in five to seven years.

While most thin polymer concrete deck overlays will require application of additional polymer material at 5- to10-year intervals (depending on the nature and volume of traffic), they provide a viable alternative to rigid concrete overlays where rapid construction is essential, or where the addition of dead load is critical.

Some Observations and Lessons Learned

The data obtained from testing of WSDOT polymer overlays and information from construction records supports the following comments on the performance of Epoxy and MMA overlays to date.

1. Chloride permeability tests show that both Epoxy and MMA overlays are very effective in preventing chloride-ion penetration.
2. Epoxy overlays appear to have better initial and long term bonding compared to MMA overlays.
3. MMA overlays appear to provide better long term skid resistance compared to Epoxy overlays.
4. Both Epoxy and MMA overlays are comparable in cost.

WSDOT's use and experience with polymer overlays has evolved since the first polymer overlay in 1984. Some of the major observations are summarized below.

1. The same type of Polymer used for the overlay should be used to repair spalls and delaminations in the bridge deck.
2. A prime coat of Epoxy should be applied with an Epoxy polymer overlay.
3. An application of large aggregate ($^1/_2$ inch) should be specified.
4. Thin polymer overlays should not be applied using continuous batching machines.
5. Thin polymer overlays are sensitive to moisture before they cure.

Opportunities to Enhance Your Skills

For more information or training needs not listed in this bulletin, contact Stan Sanders, T² Center Training Coordinator, at (800) 973-4496 or (360) 705-7477

Classes and Workshops

Northwest Technology Transfer Center
(360) 705-7386, Fax (360) 705-6822

Call Laurel Gray in the T² Center to register.

- ❒ **NHI Safety Management System** (BKA). July 18-19, St. Placid Priory, Lacey. No fee.

WSDOT Staff Development Training Opportunities
(360) 705-7386, Fax (360) 705-6822

Call Laurel Gray in the T² Center to register or get on the wait list for future classes.

- ❒ **Miscellaneous Documentation** (ACY). September 12, December 19, Tacoma; September 26, Seattle. No fee.
- ❒ **PCC Field Testing Procedures** (ABT). September 7, October 11, Seattle. No fee.
- ❒ **Drainage Inspection** (ACF). October 5, Seattle; December 20, Tacoma. No fee.
- ❒ **Bridge Structures Inspection** (ACM). November 28-30, Tacoma; December 5-7, Seattle. No fee.
- ❒ **Excavation and Embankments Inspection** (AC3). September 14, Seattle; September 19, Tacoma. No fee.
- ❒ **Asphalt Paving Inspection** (ACB). September 14, Tacoma; November 8, Seattle. No fee.
- ❒ **Nuclear Gauge, Operator Qualification** (ALG). July 12, Seattle. No Fee.
- ❒ **Nuclear Gauge, Embankment/ Surfacing/Pavement Applications** (ANQ). July 13, Seattle. No fee.
- ❒ **Worksite Traffic Supervisors Seminar** (A42), ATSSA. July 18-20, Yakima; October 3-5, Seattle; December 12-14, Lacey. $250 (plus $75 for Certification, to be paid at the time of course completion).
- ❒ **Electrical-Illumination and Signals** (API). September 20-21, Seattle; October 17-18, Tacoma. No fee.

University of Washington, TRANSPEED
(206) 543-5539, (206) 543-2352

- ❒ **Uniform Traffic Control Devices, MUTCD.** August 23-24, Seattle; October 30-31, Spokane. $120 public agency personnel, $300 others.
- ❒ **Advanced Highway Capacity Analysis for Engineers and Planners.** September 6-8, Seattle. $160 public agency personnel, $350 others.
- ❒ **Introduction to Pavement Management Systems.** September 14-15, Spokane. $120 public agency personnel, $300 others.
- ❒ **Advanced Pavement Design.** September 18-20, Seattle. $160 public agency personnel, $350 others.
- ❒ **Introduction to Geographic Information Systems, Transportation Applications.** September 11-13, Seattle. $120 public agency personnel, $300 others.
- ❒ **Hydraulics/Basic Drainage Design.** October 3-5, Seattle. $160 public agency personnel, $350 others.
- ❒ **Traffic Signal Design.** October 17-18, Seattle $120 public agency personnel, $300 others.
- ❒ **Basic Roadway Pavement Design.** October 24-25, Vancouver. $120 public agency personnel, $300 others.
- ❒ **Roadway Geometric Design Standards.** November 15-16, Lacey. $120 public agency personnel, $300 others.
- ❒ **Inspection Practice.** November 2-3, Spokane. $120 public agency personnel, $300 others.
- ❒ **Project Management and Claims Avoidance.** November 30-December 1, Spokane. $120 public agency personnel, $300 others.
- ❒ **Basics of Traffic Engineering for Engineering Personnel.** December 7-8, Lacey. $120 public agency personnel, $300 others.

Washington State University, Conferences and Institutes
(800) 942-4978, Fax (509) 335-0945

- ❒ **How to Implement the Kerzner Approach to Project Management: Mastering a Systems Approach to Planning, Scheduling, and Controlling.** August 10-11, Red Lion Hotel/ Columbia River, Portland, OR. $895.

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- ❒ **Train the Trainer.** September 18-19, Holiday Inn, Seattle. $795.

University of Washington, College of Engineering
(206) 543-5539, FAX (206) 543-2352

- ❒ **Managing International Documentation Projects.** September 18-19, University of Washington Campus. $495.

Washington State Department of Labor and Industries
(360) 902-5590, FAX, (360) 902-5459

- ❒ **Accident Investigation.** July 12, Vancouver; July 18, Tukwila; August 1, Yakima; August 2, Wenatchee; August 8, Kennewick; August 10, Spokane; August 10, Tacoma; August 17, Bremerton; August 22, September 19, Tukwila; August 24, Port Angeles; September 19, Tumwater. No fee. 3 hours.
- ❒ **Accident Prevention Programs.** July 11, August 1, September 12, Tacoma; July 12, Vancouver; July 19, September 20, October 18, Tumwater; July 25, September 26, Port Angeles; July 25, August 23, September 26, October 24, November 7, December 7, Tukwila; July 26, Yakima; July 27, August 1, September 7, Spokane; August 1, Pasco; August 8, Bremerton; August 9, Walla Walla; August 24, October 26, Vancouver; September 19, Bremerton; September 14, Mount Vernon; September 19, Bremerton; September 19, Everett. No fee.
- ❒ **Bloodborne Pathogens.** July 14, Tumwater; August 7, Vancouver; August 16, October 12, Tukwila; September 13, Everett; September 20, Spokane; September 27, Tacoma. No fee. 3 hours.
- ❒ **Confined Space.** August 15, Spokane; August 9, September 14, October 18, December 12, Tukwila; September 6, Tacoma. No fee. 3 hours.
- ❒ **Excavation and Trenching.** July 13, September 13, November 29, Tukwila; July 27, Yakima; August 2, Pasco; August 8, Everett; August 10, Walla Walla; August 15, Bremerton; August 17, Vancouver; August 17, Spokane. No fee. 4 hours.
- ❒ **Fall Protection.** July 11, September 20, November 19, Tukwila; July 13, September 28, Spokane; July 14, Tumwater; July 18, August 2, Pasco; July 27, Yakima; August 3, Vancouver; August 10, Walla Walla; September 12, Everett; September 13, Tacoma. No fee. 4 hours.
- ❒ **Hazard Communication.** July 27, August 21, Vancouver; July 12, September 27, December 6, Tukwila; July 5, August 3, Tumwater; July 19, September 12, Spokane; September 20, Everett. No fee. 3 hours.
- ❒ **Introduction to Ergonomics and the New Voluntary Guidelines.** August 16, Tumwater; July 11, September 14, Spokane; July 18, Kennewick; August 3, Tukwila; September 20, Okanogan; September 21, Everett. No fee. 4 hours.
- ❒ **Supervisors' Guide to Loss Control.** August 24, Spokane; September 28, Wenatchee; July 13, September 14, Tacoma; July 19, Ephrata; September 13, Everett; September 21, Port Angeles. No fee. 3 hours.
- ❒ **Lockout-Tagout.** September 26, Everett. No fee. 2-3 hours.
- ❒ **Lead in Concentration.** August 3, Spokane; August 9, Yakima; September 13, Wenatchee; September 20, Pasco. No fee. 3 hours.
- ❒ **Workers' Compensation and the ADA Connection.** September 13, Tumwater; July 6, Longview; July 20, Vancouver; September 8, Aberdeen. No fee. 3 hours.

Keye Productivity Center
(800) 821-3919

- ❒ **Basic Supervision.** August 8, Red Lion Columbia River, Portland, OR; August 9, Best Western Tower Inn, Richland; August 10, Bellevue Inn, Seattle. Learn the three essential ingredients of supervising; how to take the worry out of hiring and firing; effective delegation skills that could save you two hours a day; how to motivate your employees, even when you can't give them raises or promotions; and more. For supervisors, managers, department heads, team leaders, and anyone who supervises people. Lecture, examples, exercises. $139.

Fred Pryor Seminars
(800) 255-6139, Fax (913) 722-8585

- ❒ **Management Problems of the Technical Person in a Leadership Role.** July 31, Holiday Inn, Everett; July 31, Red Lion-Columbia River, Portland, OR;

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August 1, Conference Center, Bellevue; August 7, Holiday Inn Holidome Airport, Portland, OR; August 8, Red Lion Inn, Pasco; August 9, Best Western Inn, Tacoma; August 9 Red Lion Motor Inn, Spokane; August 10, Ramada Inn Governor House, Olympia. $195 $185 each with three or more.

Conferences and Meetings

- ❒ **WSAC Eastern District Meeting.** September 21-22, Moses Lake.
- ❒ **WSAC Western District Meeting.** October 5-6, Long Beach.
- ❒ **WSAC Legislative Conference.** November 8-10, Semi-Ah-Moo, Blaine.
- ❒ **WASHTO '95 Annual Convention.** July 15-19, Sheraton Harbor Island Hotel, San Diego, CA.
- ❒ **Pacific Rim Transportation Technology Conference.** (360) 705-7802, July 30-August 2, Washington State Convention & Trade Center, Seattle.
- ❒ **Sino-American Major Construction/Investment Trade Fair, World of Concrete.** (800) 837-0870, August 4-6, World Trade Center, Tacoma.
- ❒ **Institute of Transportation Engineers (ITE) Annual Meeting.** (202) 554-8050, August 5-8, Denver.
- ❒ **1995 Annual National T^2 Conference.** August 6-9, Kansas City, KS. Convention.
- ❒ **Public Transportation Conference.** August 22-24, Convention Center, Spokane.
- ❒ **Infrastructure Assistance Coordinating Council Annual Finance Conference.** September 11-12, Convention Center, Wenatchee.
- ❒ **National Rail Conference, "Rail-Volution."** September 16-18, Convention Center, Portland, OR. Convention. $275.
- ❒ **Northwest Truck Heavy Equipment Exposition.** September 20-22, Exposition Center, Portland, OR. 3 days
- ❒ **American Public Works Association, 1995 Fall Conference APWA, Washington Chapter.** October 3-6, Spokane. Joint meeting with British Columbia APWA Chapter.
- ❒ **1995 Western Snow and Ice Conference, APWA Colorado Chapter.** (303) 863-9506, October 9-13, Estes Park Conference Center, Colorado. National Snow Roadeo, Fleet Management Conference and Equipment Show.
- ❒ **GalvaTech 95, Seminar, American Galvanizers Association.** (800) 788-4258, fax (303) 750-2909, November 7, Portland, OR. $50, Merit Scholarships available.
- ❒ **National Seismic Conference on Bridges and Highways, Tonya Corporation, FHWA.** (202) 289-8100, fax (202) 289-8107 December 10-13, Doubletree Inn - Horton Plaza, San Diego, CA. Conference. $140.
- ❒ **Pacific NW Highway Incident Management Conference.** September 18-19, Vancouver, WA. Contact FHWA Region 10 (503) 326-2071.

Employment Opportunity

T^2 Road Shows Trainer

Applications are being accepted for the T^2 Center's Road Show trainer position.

This position is intermittent, being approximately four months in the spring and/or four months in the fall of each year. $14.07-17.99 per hour DOQ.

Under the direction of the T^2 Director, the trainer conducts training sessions and provides technical advice to transportation agencies in Washington State. The trainer coordinates with public works directors, road and street superintendents and others in selecting and presenting various video materials and leads discussions on technical subjects of construction and maintenance. This person also represents the T^2 Center at workshops and association meetings as designated by the Center's Director.

Considerable transportation experience is required preferably at the city, county, state or federal level in maintenance or construction. Ability to speak to groups and being sensitive to audiences is required. Considerable travel is also required.

Contact George D. Crommes, NWT^2 Director, WSDOT-TransAid, P.O. Box 47390, Olympia, WA 98504-7390 for questions and application form. Each candidate should use a standard WSDOT application form which may be supplemented by a resume of experience. Closing date is August 15, 1995.

A newsletter of the Local Technical Assistance Program (LTAP)

Issue Number 47, Summer 1995

Bulletin

The Technology Transfer Center (T^2) Program is a nationwide effort financed jointly by the Federal Highway Administration (FHWA) and individual state departments of transportation. Its purpose is to translate into understandable terms the latest state-of-the-art technologies in the areas of roads, bridges, and public transportation to local highway and transportation personnel.

Any opinions, findings, conclusions, or recommendations presented in this newsletter are those of the authors and do not necessarily reflect the views of WSDOT or FHWA. All references to proprietary items in this publication are not endorsements of any company or product.

Washington State Department of Transportation
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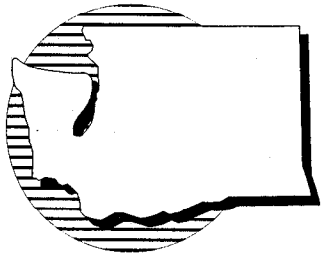
Federal Highway Administration



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